

PRELIMINARY AMENDMENT

1.53(b) Divisional of Appln. No.: 09/680,687

AMENDMENTS TO THE SPECIFICATION

Amend the specification by inserting before the first line the following paragraph:

This is a divisional of Application No. 09/680,687 filed October 6, 2000; the disclosure of which is incorporated herein by reference.

Page 1, please replace paragraphs 1 and 2 with the following amended paragraph:

1. Field of the Invention

The present invention relates to a bearing apparatus of sealing type including roll neck bearings used to, for example, in iron and steel facilities or rolling machines.

2. Description of the Related Art

As roll neck bearings to be used to work rolls of hot rolling machines, cold rolling machines or intermediate rolls, it is ~~general~~ conventional to use tapered roller bearings in double-row or four-row capable of supporting large load.

Page 1, please replace paragraph 4 with the following amended paragraph:

The sealing device equipped with a seal of contacting type as described in JP-A-6-82437U is, in ~~generally~~ general, broadly used, but ~~is involved with~~ has a problem of causing heat at a sliding face of the seal. In particular since a high speed operation of rolling machines has recently been designed for background of increasing productivity, relatively large clearances or gaps in an interior of the bearings have been made, taking thermal expansion into consideration. However, an eccentric amount in the seal of the contacting type of the sealing device is therefor increased, resulting to lower the sealing ability or increase heat in the seal sliding face so that the

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contacting seal is worn or damaged at an earlier period. Further, though heat resistance of the contacting seal may be considered to improve it, a new problem arises that cost will be heightened.

Page 2, please replace paragraphs 1, 2 and 3 with the following amended paragraphs:

On the other hand, there is a sealing device provided with a seal of non-contacting type such as labyrinth seal as described in JP-B-3-66963. Being without the sliding part, the sealing device of such type has no problem of heating the seal and may comply with the rolling machine operated at high speed, but when operated at relatively low speed, ~~a problem occurs less displaying the labyrinth effect making, which makes use of a centrifugal force, is compromised.~~

In a case of the non-contacting seal as the labyrinth seal, for inspecting the interior of the bearing and supply grease, the labyrinth seals are generally fixed at inner and outer races on the circumference with many bolts, to thereby assemble and disassemble them. This case, however, increases the number of parts, is complicated in a structure of the sealing device, and ~~takes troubles in assembling and disassembling them~~ procedures are inefficient.

SUMMARY OF THE INVENTION

Accordingly, in view of such problems as mentioned, it is an object of the invention to provide a compact bearing apparatus of sealing type enabling to comply with machines to be driven at high speed, while heightening the sealing ability ~~when at low speed speeds.~~

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Page 22, please replace paragraph 3 with the following amended paragraph:

In Fig. 7, a sealing body 427 has a base part 427a applied to the outer circumference over the axial direction of the core metal 126, and the base part 427a is formed at one part thereof with a tapered face 427b. The outer race holder 421 is formed with a tapered face 421e to oppose to the tapered face 427b. The tapered face 421e of the outer race holder 421 and the tapered face 427b of the sealing body 427 form the labyrinth seal. The supporting edge 12a of the inner race 12, the sleeve 122, the holder 125 and the core metal 126 compose the inner race member. In addition, a sealing member is composed by the sealing body 427 and the radial face 421c of the outer race holder 421 as the sealing face part.

Page 23, please replace paragraph 3 with the following amended paragraph:

In Fig. 7, a sealing body 427 has a base part 427a applied to the outer circumference over the axial direction of the core metal 126, and the base part 427a is formed at one part thereof with a tapered face 427b. The outer race holder 421 is formed with a tapered face 421e to oppose to the tapered face 427b. The tapered face 421e of the outer race holder 421 and the tapered face 427b of the sealing body 427 form the labyrinth seal. The supporting edge 12a of the inner race 12, the sleeve 122, the holder 125 and the core ~~metal~~ metal 126 compose the inner race member. In addition, a sealing member is composed by the sealing body 427 and the radial face 421c of the outer race holder 421 as the sealing face part.

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Page 28, please replace paragraph 1 with the following amended paragraph:

In Fig. 8, a core metal 526 having a substantially L-shaped cross section is fitted into and mounted on the outer circumference of the supporting edge 12a of the inner race 12 by means of a bolt 624 screwed with a screwing hole 522a of the sleeve 522 similarly to the above embodiment. A cylindrical sealing body 527 is furnished on the outer circumference of the core metal 526, and the labyrinth seal is defined by a tapered face 521a of the outer race holder 521 and an opposite tapered face 527a formed in the sealing body 527. The supporting edge 12a of the inner race 12, the sleeve 522, and the core ~~metal~~ metal 526 compose the inner race member. In addition, a sealing member is composed by a sealing body 527 and the outer circumference of the cylindrical part 528a of a receiving metal 528 as the sealing face part.